Temporal Knowledge Representation and Exploitation for the Henri Poincaré (1854-1912) Correspondence Corpus

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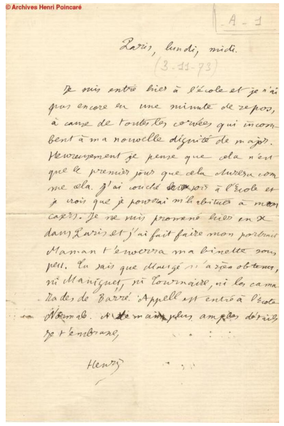
Data for History

Modelling, curation, interoperability



A historical corpus

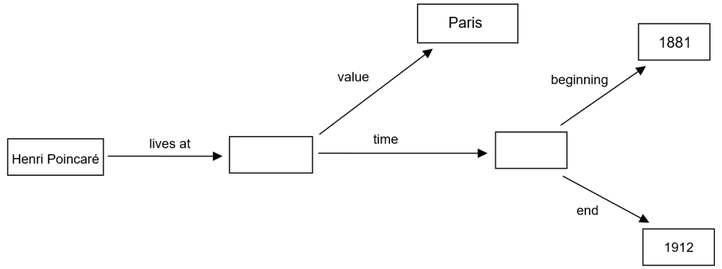
- Composed of around 2200 letters
- Important knowledge base
  - Scientific content
  - Administrations and learned societies
  - Social, political and cultural context
- Semantic Web technologies used to represent and to exploit corpus data (RDF, RDFS, SPARQL) [1]

Examples of facts that require a temporal extent

- Student at the *École polytechnique* from 1873 to 1875
- Member of the French Academy of Sciences from 1887
- Lived in Paris from 1881 to 1912
- etc.

How to add a temporal extent to facts represented using the RDF model? How to exploit this newly formed knowledge?

A model based on n-ary representations [2]

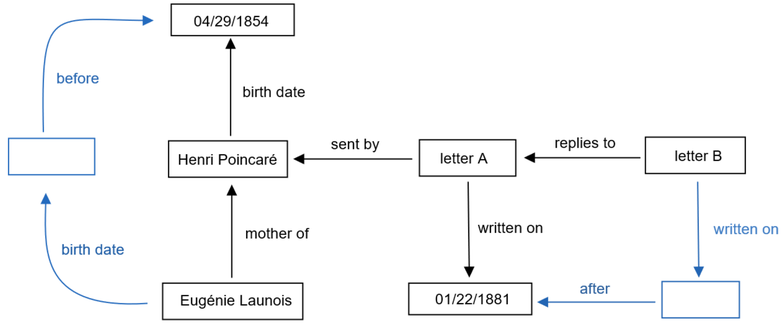


OWL-Time ontology and reasoning process

OWL-Time provides specific predicates to support, or to make explicit the results of, reasoning over the order or sequence of temporal entities [3].

A system based on custom inference rules has been set up to automatically enrich the corpus knowledge base.

Example of graph with inferred relations



References

[1] Bruneau, O., Lasolle, N., Lieber, J., Nauer, E., Pavlova, S., & Rollet, L. (2021). Applying and Developing Semantic Web Technologies for Exploiting a Corpus in History of Science: The Case Study of the Henri Poincaré Correspondence. *Semantic Web -- Interoperability, Usability, Applicability* ,12(2), 359-378.

[2] Noy, N., Rector, A., Hayes, P., & Welty, C. (2006). Defining n-ary relations on the semantic web. *W3C working group note*, *12*(4).

[3] Hobbs, J. R., & Pan, F. (2006). Time Ontology in OWL. *W3C working draft*, *27*, 133.

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